

REMARKS

Claims 2-4, 6-10, 15-20 and 23-42 remain in the application. Claims 1, 5 and 11-14, and 21-22 were previously canceled without prejudice.

Claim Rejections--35 USC 103(a)

**A. Rejection of claims 2-4, 6-9, 15-17, 25-31, 33-34 and 36 under 35 USC 103(a) as being unpatentable over Lee 1 (US 6,539,060) in view of Lee 2 (US 5,877,813).**

Claims 2-4, 6-9, 15-17, 25-31, 33-34 and 36 were rejected under 35 USC 103(a) as being unpatentable over Lee 1 (US 6,539,060) in view of Lee 2 (US 5,877,813). This rejection is respectfully traversed.

Claim 2 recites as follows.

2. A method of processing all or a portion of a multi-dimensional signal with a domain composed of a collection of arbitrarily shaped domains via a multi-scale transform comprising the steps of:
  - a. Obtaining a multi-dimensional digital image frame;
  - b. Breaking the image frame into constituent arbitrary shaped domains, or given such a set, that cover all or a portion of the original multidimensional signal domain; and
  - c. **Performing a combined domain and pattern adaptive transform** on one or more of the collection of arbitrary shaped domains, wherein a filter comprising a convolution operator is applied to process pixels near a boundary of the domain, and **wherein filter coefficients for an interpolation filter are scaled**

**by an inverse of a gradient value.**

(Emphasis added.)

As shown above, amended claim 2 is now limited such that it requires

**“Performing a combined domain and pattern adaptive transform** on one or more of the collection of arbitrary shaped domains, wherein a filter comprising a convolution operator is applied to process pixels near a boundary of the domain, **and wherein filter coefficients for an interpolation filter are scaled by an inverse of a gradient value.**” (Emphasis added.) The amendment to this claim element is supported in the original specification on pages 30 and 31 which discloses pattern adaptive transforms and combining a pattern adaptive transform with a domain adaptive transform. In particular, page 30, lines 25-26 recites, “Each of the filter coefficients is then scaled by the inverse of the gradient value.”

In regard to Lee 1, the latest office action states, “Lee 1 does not clearly teach an inverse of a gradient value ....” (Page 4, line 1.) Applicants agree that Lee 1 does not teach or suggest the above-recited claim element of amended claim 2.

In regard to Lee 2, the latest office action asserts, “Lee 2 teaches determining edge pixels with a gradient as shown in fig. 2:20-40 and with the claimed inverse of a gradient value ‘ $g(i,j)$ ’ in equations (2)-(4) since the gradient does appear in the denominator in equation (2) represented as  $m_n$  that is considered an inverse relative to the numerator of equation (2).” Applicants respectfully disagree with this assertion.

First, the cited equation (2) of Lee 2 defines the “**local threshold value  $T_n$  with respect to an n-th 8x8 block** in the gradient image” (col. 4, lines 1-13, emphasis added). In contrast, the claim element recites that “**filter coefficients for an interpolation filter** are scaled by an inverse of a gradient value.” (Emphasis added.)

Applicants respectfully submit that the *function and implementation* of **local threshold values** are entirely different from the *function and implementation* of **filter coefficients** for an interpolation filter. Therefore, applicants respectfully submit that equation (2) in Lee 2 is unrelated and irrelevant to the claimed filter coefficients for an interpolation filter.

Second, applicants respectfully submit that the Examiner is narrowly focusing only on the **denominator** of the term  $\sigma_n / m_n$ , while ignoring the numerator of that term. However, if the **whole** term  $\sigma_n / m_n$  is considered, then one sees that gradient values are in **both** the numerator  $\sigma_n$  and the denominator  $m_n$ . With gradient values in both numerator and denominator, it is clear that the local threshold value does not scale inversely with the gradient as asserted in the latest office action.

Therefore, for one or both of the reasons discussed above, applicants respectfully submit that claim 2 overcomes its rejection.

Dependent claims 6-9, 15-17, 25-31, 33-34 and 36 depend from claim 2. Therefore, these claims also overcome their rejections for at least the same reasons as given in regard to claim 2.

Similar to claim 2, amended claim 3 recites “Performing a combined domain and pattern adaptive transform ... wherein filter coefficients for an interpolation filter are scaled by an inverse of a gradient value.” Therefore, applicants respectfully submit that claim 3 now overcomes this rejection for at least the reasons discussed above in relation to claim 2.

Similar to claim 2, amended claim 4 recites “Performing a combined domain and pattern adaptive transform ... wherein filter coefficients for an interpolation filter are scaled by an inverse of a gradient value.” Therefore, applicants respectfully submit that claim 4 now overcomes this rejection for at least the reasons discussed above in relation to claim 2.

**B. Rejection of claim 10 under 35 USC 103(a) as being unpatentable over Lee 1 in view of Lee 2 and further in view of Lei et al. (US 6,356.665).**

Claim 10 was rejected under 35 USC 103(a) as being unpatentable over Lee 1 in view of Lee 2 and further in view of Lei et al. (US 6,356.665). This rejection is respectfully traversed.

Claim 10 depends from claim 2. Lei et al. does not cure the deficiencies of Lee 1 and Lee 2 that are discussed above in relation to claim 2. Therefore, claim 10 also overcomes its rejection for at least the same reasons as given in regard to claim 2.

**C. Rejection of claims 18 and 35 under 35 USC 103(a) as being unpatentable over Lee 1 in view of Lee 2 and further in view of Ostermann (US 5,646,689).**

Claims 18 and 35 were rejected under 35 USC 103(a) as being unpatentable over Lee 1 in view of Lee 2 and further in view of Ostermann (US 5,646,689). This rejection is respectfully traversed.

Claims 18 and 35 depends from claim 2. Ostermann does not cure the deficiencies of Lee 1 and Lee 2 that are discussed above in relation to claim 2. Therefore, claims 18 and 35 also overcome their rejection for at least the same reasons as given in regard to claim 2.

**D. Rejection of claims 19, 20 and 23-24 were rejected under 35 USC 103(a) being unpatentable over Lee 1 in view of Lee 2 and further in view of Etoh (US 5,859,932).**

Claims 19, 20 and 23-24 were rejected under 35 USC 103(a) being unpatentable over Lee 1 in view of Lee 2 and further in view of Etoh (US 5,859,932). This rejection is respectfully traversed.

Claims 19, 20 and 23-24 depend from claim 2. Etoh does not cure the deficiencies of Lee 1 and Lee 2 that are discussed above in relation to claim 2. Therefore, claims 19, 20 and 23-24 also overcome their rejection for at least the same reasons as given in regard to claim 2.

**E. Rejection of claims 32 and 37-42 under 35 USC 103(a) being unpatentable over Lee 1 in view of Lee 2 and further in view of Avinash (US 6,757,442).**

Claims 32 and 37-42 were rejected under 35 USC 103(a) being unpatentable over Lee 1 in view of Lee 2 and further in view of Avinash (US 6,757,442). This rejection is respectfully traversed.

Claims 32 and 37-42 depend from claim 2. Avinash does not cure the deficiencies of Lee 1 and Lee 2 that are discussed above in relation to claim 2. Therefore, claims 32 and 37-42 also overcome their rejection for at least the same reasons as given in regard to claim 2.

Conclusion

For the above discussed reasons, applicants respectfully submit that claims 2-4, 6-10, 15-20 and 23-42 overcome the rejections in the latest office action.

The Examiner is invited to call the undersigned for any questions.  
Favorable action is respectfully solicited.

Respectfully submitted,

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